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Study of Some Factors Effecting on Productivity of Solar Distillers

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Abstract : The aim of this research was increasing the productivity of solar distillation. In order to reach this aim, a solar distiller was created with three glass sides sloping 30o at the horizontal level, and the experiments were carried out on the solar distillation unit during the period from 24th August, 2016 till 24th May, 2017 at the Agricultural Engineering and Bio Systems Department, Faculty of Agriculture, Menoufia University. Three gap lengths were used between the water level and the inner glass cover, those were 3, 6, and 9 cm. As the result of change the gap length between the water level and the inner glass cover the total volume of basins were changed from 15.5, 13, and 11 L, respectively. The total basin volume was divided to three sections, to investigate the effect of water volume. The three water volumes were 100%, 75%, and 50%. Every section was supplied with one, two, or three heaters. The one heater power was 15 W. The results showed that, by increasing the distance between the basins edge and the inner edge of the glass cover, an increase occurs in the percentage of temperature difference with maximum value was 52% at distance 9 cm from each edge, an increase occurs in the productivity with maximum productivity was 3.3 L/m2 at distance 9 cm from each edge and an increase occurs in the efficiency with maximum efficiency was 70% at distance 9 cm from each edge.

Keywords : distillation, solar energy, still productivity, efficiency
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